

Claims

What is claimed is:

1. An electrophotographic image forming apparatus, comprising:

a drive roller comprising a shaft and a surface coating on said shaft; an

5 exterior surface of said drive roller having a textured finish with a plurality of microscopic protrusions and a plurality of microscopic depressions;

a flexible belt having a first hardness driven by said drive roller, said belt moving at least one of a toner image or a recording media having a toner image thereon in a electrophotographic image forming apparatus; and

10 wherein said surface coating comprises a base compound and plurality of grit particles; said grit particles corresponding to said protrusions and having a second hardness which is higher than said first hardness.

2. The apparatus of claim 1 wherein said surface coating has a thickness of not more than about 50 microns.

15 3 The apparatus of claim 2 wherein said surface coating has a thickness in the range of about 30 microns to about 50 microns.

4. The apparatus of claim 1 wherein said grit particles comprise one or more ceramics.

5. The apparatus of claim 1 wherein said grit particles comprise one or more
20 polymer compounds.

6. The apparatus of claim 1 wherein said grit particles comprise aluminum oxide.

7. The apparatus of claim 1 wherein said drive roller has a coefficient of static friction of at least 0.5 with said belt.

8. The apparatus of claim 1 wherein said shaft comprises a shaft having a machined surface, said surface coating applied to said machined surface.

5 9. The apparatus of claim 1 wherein said shaft comprises an aluminum shaft.

10. The apparatus of claim 8 wherein said shaft includes at least one longitudinal passage.

11. The apparatus of claim 10 wherein said shaft comprises a plurality of interior ribs and a plurality of longitudinal passages disposed between said plurality of interior
10 ribs.

12. The apparatus of claim 1 further comprising a plurality of toner cartridges supplying toner for said toner image.

13. The apparatus of claim 1:

15 wherein said shaft comprises a shaft having a machined surface, said surface coating applied to said machined surface.

wherein said surface coating has a thickness in the range of about 30 microns to about 50 microns; and

wherein said drive roller has a coefficient of static friction of at least 0.5 with said belt.

14. The apparatus of claim 13 wherein said shaft comprises an aluminum shaft with a plurality of interior ribs and a plurality of longitudinal passages disposed between said plurality of interior ribs.

15. A method of forming a electrophotographic image forming apparatus,
comprising:

providing a shaft having a surface;

applying a coating to said surface to form a drive roller with a coated exterior

5 surface having a textured finish with a plurality of microscopic protrusions

and a plurality of microscopic depressions; said surface coating comprising

a base compound and plurality of grit particles having a first hardness; said

grit particles corresponding to said protrusions; and

disposing said drive roller to drive a flexible belt, said flexible belt having a

10 second hardness which is lower than said first hardness; said belt operative

to move at least one of a toner image or a recording media having a toner

image thereon in the electrophotographic image forming apparatus.

16. The method of claim 15 wherein said coating on said surface of said shaft has
a thickness of not more than about 50 microns.

15 17. The method of claim 16 wherein said coating on said surface of said shaft has
a thickness in the range of about 30 microns to about 50 microns.

18. The method of claim 15 wherein said grit particles comprise one or more
ceramics.

19. The method of claim 15 wherein said grit particles comprise one or more
20 polymer compounds.

20. The method of claim 15 wherein disposing said drive roller to drive a flexible belt comprises disposing said drive roller to drive said flexible belt with a coefficient of static friction of at least 0.5 therebetween.

21. The method of claim 15 wherein providing a shaft comprises providing a shaft
5 with a machined surface, and wherein applying a coating to said surface to form a drive roller comprises applying said coating to said machined surface to form a drive roller.

22. The method of claim 15 wherein providing a shaft comprises providing an aluminum shaft.

23. The method of claim 15 wherein providing a shaft comprises providing an
10 aluminum shaft with at least one longitudinal passage.

24. The method of claim 23 wherein providing said shaft with at least one longitudinal passage comprises providing said shaft with a plurality of interior ribs and a plurality of longitudinal passages disposed between said plurality of interior ribs.

25. The method of claim 15:
15 wherein providing a shaft comprises providing a shaft having a machined surface;
wherein applying a coating to said surface to form a drive roller comprises applying said coating with a thickness in the range of about 30 microns to about 50 microns to said machined surface to form a drive roller; and

wherein disposing said drive roller to drive a flexible belt comprises disposing said drive roller to drive said flexible belt with a coefficient of static friction of at least 0.5 therebetween.